California Public Utilities Commission Workshop 1:00 PM, May 11, 2015

Calculating MAOP for post-1970 pipe

US DOT PHMSA Office of Pipeline Safety

Topics Areas for Discussion

- Applicable Regulations
- Required Records
- Prior PHMSA Guidance

§192.619 – MAOP Calculations- All Pipelines

Lowest of the following:

- (a)(1) Design
- (a)(2) Test Pressure
- ~~(a)(3) MOP during the 5 years preceding July 1, 1970~~
- (a)(4) Maximum Safe Pressure determined by the Operator

Subpart A–General

- 192.3 Definitions.
- 192.5 Class locations.

These are fundamental building blocks for correctly determining MAOP

Class Location Definition §192.5

- The class location unit is an onshore area that extends 220 yards on either side of the centerline of any continuous 1-mile length of pipeline.

- The class location is determined by the buildings in the class location unit. For the purposes of this section, each separate dwelling unit in a multiple dwelling building is counted as a separate building intended for human occupancy.
- Clustering is allowed and must be performed correctly

Subpart C–Pipe Design

- 192.105 Design formula for steel pipe.
- 192.107 Yield strength (S) for steel pipe.
- 192.109 Nominal wall thickness (t) for steel pipe.
- 192.111 Design factor (F) for steel pipe.
- 192.113 Longitudinal joint factor (E) for steel pipe.
- 192.115 Temperature derating factor (T) for steel pipe.
- 192.121 Design of plastic pipe.
- 192.123 Design limitations for plastic pipe.

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- After correctly designing the pipeline, the operator conducts an adequate pressure test.
- SubPart J

Subpart J–Test Requirements

- 192.501 Scope.
- 192.503 General requirements.
- 192.505 Strength test requirements for steel pipeline to operate at a hoop stress of 30 percent or more of SMYS.
- 192.507 Test requirements for pipelines to operate at a hoop stress less than 30 percent of SMYS and above 100 psig.
- 192.509 Test requirements for pipelines to operate below 100 psig.
- 192.511 Test requirements for service lines.
- 192.513 Test requirements for plastic pipelines.
- 192.515 Environmental protection and safety requirements.
- 192.517 Records.

Test Pressure - Steel > 100 psi §192.619(a)(2)(ii)

	Factors, segment		
Class location	Installed before Nov. 12, 1970	Installed after Nov. 11, 1970	Covered under §192.14
1	1.1	1.1	1.25
2	1.25	1.25	1.25
3	1.4	1.5	1.5
4	1.4	1.5	1.5

192.505(a)

192.505(a) Except for service lines, each segment of a steel pipeline that is to operate at a hoop stress of 30 percent or more of SMYS must be strength tested in accordance with this section to substantiate the proposed maximum allowable operating pressure. In addition, in a Class 1 or Class 2 location, if there is a building intended for human occupancy within 300 feet (91 meters) of a pipeline, a hydrostatic test must be conducted to a test pressure of **at least 125 percent of maximum operating pressure** on that segment of the pipeline within 300 feet (91 meters) of such a building, but in no event may the test section be less than 600 feet (183 meters) unless the length of the newly installed or relocated pipe is less than 600 feet (183 meters). However, if the buildings are evacuated while the hoop stress exceeds 50 percent of SMYS, air or inert gas may be used as the test medium.

Questions and Answers?